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ABSTRACT

This paper discusses the relationships between males and females, the computer culture, the influence of mass media, and community. Mass media images of society reflect and reinforce the stereotypes and realities of gender tracking, separating males from females beginning in childhood and extending through adult life. There is evidence of different types of usage and different attitudes toward computers between males and females--males tend to focus on the tool itself, and females tend to focus on the utility of the tool. The media capitalizes on the difference in the relationship between people and computers based on gender, further widening the gap by concentrating on or exaggerating stereotypical roles. Women are not well represented in the new generation of high technology occupations, and gender differences with their social consequences are likely to persist in computer-mediated networks. Males and females belong to separate "natural" communities--communities determined by birth--however, it is important to work together to find common ground between the male and female communities, and address the issue of gender from within a societal context, rather than from a male versus female approach. Even though the majority of computer network users are males, females must be encouraged to learn skills and be provided with opportunities to have equal access to information, and be portrayed in productive roles using technology. People can influence educational applications of the Web by designing instructional environments that attend to the needs of the female population as well as those of male. (Contains 41 references.) (Author/SWC)

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Technology, Mass Media, Society, and Gender

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Abstract

This paper expresses different points of view about the relationships between males and females, the computer culture, the influence of mass media, and community. It cautions readers to understand the need for sensitivity to the male perspective and the need to address the issue of gender from within a societal context, rather than from a male versus female approach.

Mass media images of our society reflect the stereotypes and the realities of gender tracking, often separating males from females. For example, one might think about a common media image of adults at work. The typical chief executive officer (CEO) in real corporate board rooms and in the media is male; he wears a suit and looks like a competent leader. The real elementary school teacher is female, dresses for doing school projects, and wears a pleasant expression; in the media of course, she is young and good looking, or reflects the kindly grandmother image. The roles are defined, the images are engraved in people's minds, and they appear in various forms of artwork, entertainment, advertisements, productions, and educational materials.

The cultural messages of gender separation begin early and appear throughout society in many ways. For example, the television commercials within popular children's programs feature the gratuitous sequence of two commercials for boys and two commercials for girls, not necessarily in any specific order, but certainly distinctive in gender imaging (Courtney & Whipple, 1983; Downs & Harrison, 1985; Kilbourne, 1990; Lovdal, 1989; Macklin & Kolbe, 1994). The boys' commercials are fast paced, outdoors and rugged, usually involve something on wheels, often depict aggression, employ music with a fast tempo and distinctive beat, and use camera angles that slant up, placing the boys in a dominant position within the picture. The girls" commercials are slower paced, indoors and sweet, usually involve dolls or fashion messages, often depict emotion and caring for others, employ musical sweet calm undertones, and use camera angles that slant down, placing the girls in the less dominant portion of the picture.

The stereotypes reinforced by television carry over into daily life (Berry & Asamen, 1993; Berry & Mitchell-Kerman, 1982; Bretl & Cantor, 1988; Fidell, 1975). Bring this imagery to the real experience of entering a computer consulting office at a typical university campus. The consultants are typically male, speak in a language of their own, and if you can understand the language then you might understand the help that is offered. Of course, the quality of help you get might depend completely on the degree of assistance that the consultant feels like providing, depending on an instant first impression of your needs and your perceived capacity to understand the help you get. With all too much frequency, the consultants miss completely and talk down to female clients or speak a language of acronyms and other technobabble that the females do not understand. Why? Where does this miscommunication start and what perpetuates it?

As we consider the answer to this question, we must ask a host of related questions. For example, why do the commercials depict boys and girls separately, reinforcing the separation by sex at an early age that leads to separation by gender throughout life? At what point and for what reasons do the genders mix in the visual images depicted in advertising and in real life? What messages are given to males and females about turf, not mixing, and why? Is there common ground that can be found, and why is it not more frequently visited? As more emphasis is placed on using the visual media in schools, what implications does this separation have for males and females?

The Internet is clearly an environment that was structured by and for males. Now that the Internet is placing more emphasis on the World Wide Web (Web), will this richness of the visual communications environment be male turf like other technology areas or will the Web be utilized as easily by females? What societal factors will influence the outcome? So far, messages within our society that are reinforced by the mass media emphasize that youth and attractiveness are good, sex is important, and males and females have certain roles to play that are separate and distinct. It is no wonder that many women who work with technology believe that the environment is hostile towards them (Turkle & Papert, 1990).

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Gender, Society and Technology

While our society encourages boys to get messy, wrestle, and explore unknown territory, girls get subtle messages to keep their hands clean, play with their dolls, obey the rules, and often they are discouraged from taking science and math in school (Kantrowitz, 1996; Rowe, 1990). While boys and girls are equally interested in computers until about the fifth grade, after that point, boys' usage rises significantly and girls' usage drops (Kantrowitz, 1996). This is most likely due to increased sex-role identification at that age. By high school, students show clear gender bias in their attitudes toward technology (Shashanni, 1994). Surely the attitudes of the high school students will carry into adulthood through higher education and into the workplace.

The neglect and omission of the female population from math and technology fields reveal themselves in subtle ways on an individual basis, but as a collective result appear throughout society as something that begins in the home, and perpetuates itself through schooling and employment practices (Rowe, 1990). If that were not the case, then there would be no need for recent efforts to attract girls into the study of math and science (Kable & Meece, 1994) and the number of distressing stories about females succeeding despite the myriad of obstacles (Aisenberg & Harrington, 1988; Clark & Corcoran, 1986; Frenkel, 1990; Gornick, 1990) would no longer be told.

Although many scholars insist that great strides have been made concerning gender equity, it has not been enough and the subtle biases remain barriers to equal opportunity (Rowe, 1990; Rutherford, 1994; Savan, 1994; Schwartz & Markham, 1985; Signorielli, 1993; Tannen, 1996; Top, 1991). The real concern goes beyond the biases of any specific people, to the larger dimension of the teachers and students, instructional designers, artists, advertisers, administrators, and families that make up society as a whole. The evidence is clear in the games of the children, the classroom practices, the design of educational products and environments, the advertisements found within all forms of visual media, and the visual messages conveyed by the entertainment industry.

Since the computer industry is relatively new, one would expect a more gender-diverse leadership. Yet that is not the case and women continue to struggle to gain knowledge, to gain credibility, and to achieve career advancement within the technology fields (Kantrowitz, 1996). Couple this with the existing difficulties faced by females who work on university campuses (Aisenberg & Harrington, 1988) and the dynamic becomes even more complex, especially as administrators begin to do such things as include degree of technology usage within employee evaluations. It would appear that many females will find themselves stuck, as they say, between a rock and a hard place.

Many people are either unwilling or unable to see beyond their current practices, beliefs, and biases. The majority of decisions about technological purchases and utilization being decided by males, thus leading to situations that are structured for males users. Why do we not routinely see male administrators seeking the opinions of female subordinates prior to making decisions about technology that will affect them in their work. For example, why are more teachers not involved in fact finding prior to making important decisions that affect their classroom practices? If computer-supported multimedia is such an important part of our lives, then why do we not see more women on the executive boards of technology companies?

The president of a technology company answered this question by saying that women have never been on the board of directors in his company and they are not acceptable candidates because they are not reliable. Why are they not reliable? Well, they will get pregnant and then they leave. When told that the women might come back quickly to jobs that reward them, the executive said the real reason was that women could not be trusted. Why not? Because they do not fit and it would not be appropriate to discuss important business with them (Larsen, 1996). It sounds outrageous but is it really that far from the truth of what commonly occurs in our society? Is it isolated to corporate board rooms? Is it part of the computer culture?

Clearly, there is evidence of different types of usage and different attitudes toward computers between males and females. Men tend to be seduced by the technology itself rather than what they can do with it in a practical sense (Kantrowitz, 1996). Like bragging about fast cars, men often brag about the size and speed of their computers and software. On the other hand, women tend to focus on the utility of the machine rather than its glamour. They do not care about what is on the inside nor what makes it work, but are very much concerned that it function sufficiently well to meet their needs (Kantrowitz, 1996).

The difference can be stated simply as a male tendency to focus on the tool itself and a female tendency to focus on the utility of the tool. While men tend to think of computers as powerful ways to extend their physical limitations, women tend to think of them as a means to an end (Kantrowitz, 1996). Men want to force computers to submit while women just want computers to work (Tannen, 1996). Thus we see a difference in the relationship between people and computers based on gender. The media capitalizes on those differences and further widens the gap

by concentrating on or exaggerating stereotypical roles in the way people are portrayed in computer clip art (Binns & Branch, 1995) and in advertisements about computer technology (Knupfer, 1996).

The literature further reveals that women are not well represented in the new generation of high technology occupations. Changing that is important because society can ill afford to waste half of its innate talent, nor can it justify wasting of talent due to gender-based access to opportunities. Discouraging half of our population from entering the high technology fields is a practice that can only hurt our society. Rather than thinking about what is good for which gender separately, the focus should be on thinking about what is good for society as a whole. Instead of arguing for equal rights for women in a way that pits women against men, it would be more beneficial to approach this as a societal problem that must be solved by working together. This distinction is crucial and it can be supported by the way in which women and men are depicted in the mass media.

Importance of Communities

Although research on computer-mediated communication dates back to the early days of computer network technology in the 1970's, it is only recently that researchers have begun to take into account the gender of the users. Recent research reveals that men and women have recognizably different styles in posting messages to the Internet, and that they have different communication ethics. One analysis of listserve discussions revealed that 68 percent of the messages posted by men used an adversarial style in which the writer distanced himself from, criticized, or ridiculed other participants, and often promoted his own importance. In contrast women displayed features of attenuation; they hedged, apologized, and asked questions rather than making assertions. In addition, the women's postings tended to reveal a personal orientation, revealing thoughts and feelings, interacting with and supporting others (Herring, 1996).

Although some people claim that electronic communications are anonymous and therefore invite participation of both males and females, that will not necessarily be the case if our on-line communicative style reveals our gender. For then gender differences, along with their social consequences, are likely to persist in computer-mediated networks (Herring, 1996). As a part of the on-line network that is fast growing, popular, and graphically oriented, the Web holds a prominent position, so it will have great impact on its users. If females are to use the web productively, then it cannot be restricted to the male domain. Let us examine some ideas about groups, territory, belonging, and oppression, and relate that information to the visual display of information about using computers.

Let us establish a straw man that represents the way that many people believe an identifiable group of people are hurt. In the case we are presenting, the injured or oppressed group is females. Which group is hurting them and why? Since the oppressed or victim group is identified based upon sex, not gender, it follows that the other group, the oppressors, must be composed of males. Logically, it follows that since females do not have equal representation in the high technology fields, remedies are needed that modify the hurtful behavior of the males so that the females' rights to equal opportunity are respected.

This process is based upon two fundamental ideas; the canon of individual rights and the process of "othering." Both of these need a clear airing. They are commonly misunderstood and misapplied. The canon of individual rights simply declares that individuals have rights. These rights are both inalienable and inherent. The United Nations General Assembly passed a statement of these rights in its 1948 document, *Declaration of Human Rights*, and reaffirmed the document within the last few years at Helsinki. In that document, certain things were declared to be *rights by birth*. The concept of *rights by birth* is quite simply wrong. It is wrong because it leaves out the modifying clause, "being born into a society." *Being born into a society*, each individual has certain *rights by birth*. If rights exist only within the context of a society, then that is a crucial omission. First, rights exist only within the context of a society. Second, rights are only violated through willful acts. "Othering" is an interesting concept that is the dark side of community. Community is the joining together or grouping of individuals in society. If an individual can say that a member of a community is, in some meaningful way, "just like me" then that individual is also a member of that community.

Communities come in two classes, natural and constructed. Natural communities are those that happen by birth or mishap. Skin color is one such community, blindness is another. Constructed communities, which are far more numerous, are largely voluntary. Religions are a good example. Soap opera viewers are another. Some constructed communities are based upon natural ones, for example, a cohesive group based on ethnic origin that has come together to recognize common interests based on that origin.

Communities vary by the intensity of the membership in the community and how society views their importance. Communities play a large and significant role in society. They not only define where individuals fit

into society, but also help people to establish identities. They provide continuity and a sense of belonging to something greater than an individual realm. Communities give people purpose.

But community has a dark side which is called *othering*. *Othering* is the opposite of community building. The meaning of being an *other* varies with the community in question. It is the group of people who can be harmful or destructive to a community. For the double jointed community, once you get past elementary school, being an *other* makes very little difference. For a Moslem in Bosnia, a Hutu in Burundi, an urban dweller in Kampucheia, a Jew in Nazi Germany or, at about the same time, a Ukrainian in the Ukraine, being an *other* had very serious consequences.

Othering and Common Ground

For members of our society at present, the consequences of being an *other* are usually not extreme on the surface. However, the subtle biases levied by those in powerful positions over many years are cumulative and can be devastating in terms of the domino effect that result. From that perspective, there is a paradigm established from which to examine potential remedial actions to get more females involved in high technology endeavors.

The basic premise of most studies about females using technology is that because the percentage of females using technology is lower than the percentage of males using technology, something is acting to keep females out. A case can be made that women's rights are being violated and remedial action is required to change the technology environment so that women are welcomed. That means there is a need to change the attitudes and behavior of society toward women and technology. Yet gender differences in attitudes toward technology begin in the way that males and females are raised, thus reflecting the social expectations of individuals, family, friends, and society (Canter, 1979; Davies & Kandel, 1981; Eccles, 1987).

But changing the society is something that cannot be done easily and must be done carefully. Remember that the canon of individual rights is based upon the premise that having rights will promote and protect society, not damage it, so the technology-using male community should not be damaged in the process. Instead there must be a way to work together to find common ground between the male and female communities. One way of helping to establish this common ground is through imagery portrayed to the general public. Imagery that shows regular women in productive roles using technology in powerful ways would help.

When communities are defined, others become the enemy. Those *others* are individuals. They came to be who they are by their belonging, and not belonging, to a variety of natural and constructed communities. Perhaps their communities are dysfunctional, perhaps they are hostile to people unlike themselves. However they came to be, the fact is that they do exist. The existing male technology community was shaped by our society. Members of that community are different in many ways from typical members of society and those differences became a part of the "just like me" criteria. There are reasons why the communities are as they are. Simply wanting to change, simply demanding females' right to inclusion will not work. Instead, the way to get females integrated into high technology fields is to find a way to get the males and females to be able to say together that they have some common ground within the technology community. That common ground cannot depict females as sexual objects nor decorations nor servants to the male needs.

This concept of building common ground begs society to examine the way it defines community. The deep and persistent problem of gender separation begins in early childhood, permeates the toy and fashion industries, sticks in the minds of teachers who separate boys and girls in to separate groups, and pushes its way into homes as parents succumb to societal pressures separate activities along gender lines. If boys and girls are not allowed to develop working relationships and friendships in early childhood, how can they be expected to overcome the barriers in later years? If they are bombarded with images of stereotypes about gender and technology throughout their lives, how will they be expected to overcome those stereotypes in later years?

It is important to ask men if they are trying to prevent women from joining their community. The male authors of this paper remembers his experience at one of the top technical universities in the United States. He recalls that there was absolutely no community with women. While growing up he had a ham radio, model rocketry, model trains, photography, and so on, but no exposure to girls on a social basis. There were virtually no girls involved in any of his activities. Why not? Were his parents narrow minded in this regard? Was his community social structure narrow channeled in this regard? Did he never explore beyond the boundaries of what came in his direction and asked to join in his current activities? In the days of his childhood, it was considered improper for a girl to extend the first invitation to a boy. For what must be a host of reasons, girls were not there and so the experience of working with girls did not exist in childhood years or in college. He says, most male "high techies" do not hate women. They love them, fear them, and perhaps have no clue how to talk to them, but they

certainly do not hate them. Women have just never been part of the male world and therefore there is a difference perspective.

You might ask why he did not consider the primary school experience to be a mixture of males and females. After all, boys and girls do participate in joint physical education classes up to a certain grade, dependent upon the community and the school. While it might be true that boys and girls are in the same class, it is also true that some teachers do a very efficient job of separating them within classroom groups. For example, "Preschool X" seems to have wonderful teachers but the entire group focuses on separating the children by gender. The class lists are hung in the hallway and distributed to parents not on the basis of who is in what class, but by gender, with all of the boys' names listed at the top and all of the girls' names listed at the bottom. When children break into groups it is by gender, and even on field trips, parents are assigned groups of children to supervise by gender (Knupfer, 1995-97).

In contrast, the female author of this paper does remember some exposure to the other gender during her childhood years. She remembers the neighborhood play and mixed gender acceptance of childhood. She also recalls that it was self initiated between the individuals involved and not assisted by teachers or parents. She remembers the distinct gender groupings of chldren when under the supervison of adults, such as at school or at birthday parties, and being called a "tomboy" by adults who observed her mixed gender activites and interest in sports.

Males and females can play together and work together in productive ways. It seems that society offers opportunities to mix, yet at some point during our childhood years those opportunities are changed by parents and teachers who define them as taboo situations, or blindly ignore the opportunities for shared experiences and the consequences of segregation. By the teenage years, males and females are strongly discouraged from intermingling by parents who fear sexual encounters. Are we to believe that males and females cannot interact in platonic ways? If that is a common belief, then perhaps it is a result of the way the media continues to influence people through its portrayal of men and women in stereotypical ways (Roberts & Maccoby, 1985).

As we move into the new forum of Web communication, the public will once again have an opportunity to shape the messages about shared space and gender stereotypes. What will we see in the near future on the Web? At least one author has already portrayed the Web as male space, depicting the changing face of advertising, Web space that is, in a male hat, necktie, and business suit (Geracioti, 1996). Even though the majority of network users are males (Shade, 1993), females must be encouraged to learn skills and be provided with opportunities to have equal access to information, and be portrayed in productive roles using technology. Women will have a chance to stake out a space, but will it be obvious or will it be overshadowed by the male presence that started the Internet and continues to dominate computer culture?

The answer to that question is certainly not simple, but people can influence educational applications of the Web by designing instructional environments that attend to the needs of the female population as well as those of males. Several authors have made suggestions about things that teacher and parents can do to improve gender equity in schools (Couch, 1995; McCormick, 1994; Olivares & Rosenthal, 1992; Ploghoft & Anderson, 1982). Those ideas can be transferred directly to any educational environment that does or does not use technology. To begin, parents and teachers can encourage reflective practice that makes adjustments to the needs at hand and considers ways to disassemble the walls of current gender segregation within our society. The information age brings the challenge of shifting responsibilities and one of the most important will be to find the common ground upon which males and females can find trust and build healthy working relationships that begin in childhood and carry on through adult life. It is no small challenge to overcome the images of mass media and years of stereotypes, but it can be done one step at a time.

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